

ESCAPE CITY

Curricular Connections Grades 7-9

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ALBERTA PROGRAMS OF STUDY: FOUNDATIONS	ESCAPE CITY
<p>Foundation 1: Science, Technology and Society (STS) Students will develop an understanding of the nature of science and technology, the relationships between science and technology, and the social and environmental contexts of science and technology.</p>	<p>Escape City's rooms involve various types of technology including: manual and physical forces, RFID sensors, electromagnets, and more.</p>
<p>Foundation 2: Knowledge Students will construct knowledge and understandings of concepts in life science, physical science and Earth and space science, and apply these understandings to interpret, integrate and extend their knowledge.</p>	<p>Escape rooms require students to rapidly build knowledge and apply newfound discoveries in an evolving and extending integration with their surroundings.</p>
<p>Foundation 3: Skills Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively and for making informed decisions.</p>	<p>With each escape room activity, students realize the importance of skills including but not limited to: problem solving, communication, and working collaboratively.</p>
<p>Foundation 4: Attitudes Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society and the environment.</p>	<p>Escape rooms support the development of positive attitudes by rewarding those attitudes (respect, inquiry, collaboration, etc.) with success for self and others.</p>

<p>SKILLS (FOCUS ON PROBLEM SOLVING) FOR DEVELOPING A SCIENCE AND TECHNOLOGY EMPHASIS</p>	<p>ESCAPE CITY</p>
<p>Initiating and Planning</p> <ul style="list-style-type: none"> • identify questions to investigate arising from practical problems • propose alternative solutions to a given practical problem • select appropriate methods... for solving problems. 	<p>Students that initiate well and execute problem solving plans succeed in escape rooms: the problems are tangible; the questions directly relate to a solution; alternative solutions must be continually proposed; problem solving methods are selected and tested.</p>
<p>Performing and Recording</p> <ul style="list-style-type: none"> • research information relevant to a given problem • construct and test prototype designs • use tools and apparatus safely 	<p>Mobile Escape City’s Makerspace requires students to briefly research, and iteratively construct various prototype designs using provided tools and materials.</p>
<p>Analyzing and Interpreting</p> <ul style="list-style-type: none"> • identify and troubleshoot problems, and refine the operation of prototype devices • evaluate designs and prototypes in terms of function, reliability, safety, efficient use of materials and impact on the environment 	<p>Both Escape City’s escape rooms and Makerspace require the ability to identify problems. Specifically, the Makerspace focuses on refining the function of prototypes based on factors such as reliability and efficiency.</p>
<p>Communication and Teamwork</p> <ul style="list-style-type: none"> • work cooperatively with team members to develop and carry out a plan and troubleshoot problems as they arise • recommend an approach to solving a given problem, based on findings • evaluate individual and group processes used in planning and carrying out problem-solving tasks. 	<p>The best escape room teams work cooperatively with each other, solving issues as they arise. Students must persevere through obstacles, communicating suggestions as new information is discovered. Escape City engages students in self-reflection to evaluate problem solving processes.</p>

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<p>Interest in Science Students will be encouraged to show interest in science-related questions and issues.</p>	<p>The medium of the escape room engages students and provides a platform for ongoing questioning about science related topics.</p>
<p>Mutual Respect Students will be encouraged to appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds.</p>	<p>Students that enter the escape room often do so with preconceived notions about who will be helpful and who will not. These assumptions are challenged and often broken down as students learn to value the diversity of ideas and thought that can lead to innovative solutions.</p>
<p>Scientific Inquiry Students will be encouraged to seek and apply evidence when evaluating alternative approaches to investigations, problems and issues.</p>	<p>Escape City's escape rooms are built to intentionally befuddle students, forcing them to reconsider solutions during an investigation.</p>
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<p>SPECIFIC LEARNER EXPECTATIONS: STRUCTURES AND FORCES</p>	<p>ESCAPE CITY</p>
<p>7-D.1 Describe and interpret different types of structures encountered in everyday objects, buildings, plants and animals; and identify materials from which they are made.</p>	<p>Mobile Escape City’s Makerspace requires students to interpret and apply different types of materials to their structure designs.</p>
<p>7-D.2 Investigate and analyze forces within structures, and forces applied to them.</p>	<p>The Makerspace provides ample opportunity for iterative building and testing structures against various forces.</p>
<p>7-D.3 Investigate and analyze the properties of materials used in structures.</p>	<p>Students in the Escape City Makerspace are constantly analyzing the properties of the materials they use in their prototype structures.</p>

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SPECIFIC LEARNER EXPECTATIONS: MECHANICAL SYSTEMS	ESCAPE CITY
<p>8-D.1 Students will illustrate the development of science and technology by describing, comparing and interpreting mechanical devices that have been improved over time.</p>	<p>Set in different time periods and themes, Escape City’s different escape rooms feature vastly different mechanical devices: from old-fashioned pulley and levers to high-tech robotics.</p>
<p>8-D.2 Analyze machines by describing the structures and functions of the overall system, the subsystems and the component parts</p>	<p>During problem solving, teams benefit greatly by being able to describe to each other how various mechanical systems function in the escape rooms.</p>
<p>8-D.3 Investigate and describe the transmission of force and energy between parts of a mechanical system</p>	<p>In Escape City’s escape rooms, energy applied in one area of the room has an affect (ie. reveals a clue) in another part of the room via a mechanical system.</p>

SPECIFIC LEARNER EXPECTATIONS: LIGHT & OPTICAL SYSTEMS	ESCAPE CITY
<p>8-C.1 Students will Investigate the nature of light and vision; and describe the role of invention, explanation and inquiry in developing our current knowledge.</p>	<p>During certain Escape City experiences, clues which have no value to the naked eye gain meaning once a light source is altered or activated.</p>
<p>8-C.2 Students will investigate the transmission of light.</p>	<p>During certain Escape City experiences the effect of light on translucent material delivers clues that allow students to advance in the escape room.</p>

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<p>SPECIFIC LEARNER EXPECTATIONS: <i>ELECTRICAL PRINCIPLES AND TECHNOLOGIES</i></p>	<p>ESCAPE CITY</p>
<p>9-D.1 Students will investigate and interpret the use of devices to convert various forms of energy to electrical energy, and electrical energy to other forms of energy.</p>	<p>In Escape City's escape rooms, electrical energy is often transferred into magnetic energy and mechanical energy is transferred into electrical energy.</p>
<p>9-D.2 Describe technologies for transfer and control of electrical energy (use switches... to control electrical flow)</p>	<p>In Escape City's escape rooms, students are often required to transfer and control electrical energy to activate the next sequence of clues.</p>